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LVII.—*On a Land-Nemertean found in the Bermudas.* By R. v. WILLEMOES-SUHM, Ph.D., Naturalist to the 'Challenger' Expedition.

[Plate XVII.]

DURING our stay in the Bermudas I frequently visited the mangrove-swamps in Hungry Bay, Bermuda Island, in order to observe and collect the land-crabs. I then also turned over the stones which are scattered on drier land, where the cedar trees begin to dry, and looked out for worms. *Lumbricus* was very common there; but in the moist earth in which I found them I soon also observed long slimy animals, which were evidently not annelids: having brought them on board, I found them to be Nemerteans. I then returned to the spot and collected a good many more of them, which I kept in a bottle with moist earth, and was then able to observe at leisure during our cruise to the Azores.

The largest of these worms have a length of 35 millims. by 2 millims. in width. They are of a milky white colour. Their movements are slow, and sometimes caterpillar-like; they shoot out their long proboscis, fix it at some distant point, to which it adheres by means of its papillæ, and draw their body after them. Their *skin* is filled with rod-like bodies, as described by Max Schultze and others, and is covered on the outside all over with cilia. In the front we find two pairs of *eyes*, one of them near the entrance of the proboscis, the other smaller one further out; they consist of a fine granulated pigment imbedded in a colourless substance, which holds these

granules together, in which, however, a regular lens could not be observed. Underneath these eyes is seen the prominent *centre of the nervous system* (Pl. XVII. fig. 1, *g*): it consists of two lobes, and a ring which connects them and encircles the proboscis. From these lobes depart the two lateral nerves (fig. 1, *n*), and some other cephalic nerves, which were not quite clearly visible. In most genera of the Tremacephalidæ the *cephalic fissures* or ciliated sacs are easily to be seen; here they are either very small or wanting entirely. Sometimes a folding of the skin seemed to indicate their presence; but in the contractile bodies of these worms it is very difficult to say whether you have a small cephalic fissure or a folding of the skin before you.

Underneath the ganglion, on the under surface is the semi-circular opening of the *mouth* (fig. 1, *o*), leading into an intestinal tube (fig. 1, *i*), which runs through the whole length of the animal without showing any thing particular, and is terminated by an anus (fig. 1, *a*). It is covered above by a long *proboscis* (fig. 1, pr^1 - pr^4), which opens at the front and ends in the posterior part of the body, where its thin termination is attached to its walls. This proboscis is divided into two portions—the papilligerous part, and the glandular part. At the bottom of the former we find a peculiar spine, the top of which is supposed to be renewed from the smaller spines which are in store in two vesicles on each side of it. This spine is remarkable, because it differs in form according to the sex of its owner. In the male it has a rounded base and is pear-shaped (fig. 2, pr^3), while in the female the base has sharpened angles (fig. 3, pr^3). I do not think that such sexual differences have hitherto been observed in Nemerteans.

The ovaries and testes are, as usual, situated between the intestine and the walls of the body. They did not present any thing peculiar, and are not represented in the diagrammatic figure I have often referred to. Probably the animal is viviparous, as is *Tetrastemma obscurum* from the Baltic; but on this subject nothing has been observed.

Though I have not been able to demonstrate the cephalic sacs, which are peculiar to most of the Tremacephalidæ hitherto described, I think there can be hardly any doubt that this worm belongs to that family; for some marine species of the genus *Tetrastemma* bear a most close resemblance to it. I therefore think I can safely call it by this latter generic name, and establish for it the specific name of *agricola*, as there is probably no described marine species of *Tetrastemma* with which it could be identified.

I, however, do not attach much importance to this point, as

the object of these lines is only to show that in America also land-Nemerteans exist. Hitherto they were only known from the Pelew Islands, where Semper has found another Tremacephalid, to which he has given the name of *Geonemertes pelæensis*. I think it is highly probable that land-Nemerteans exist to a greater extent in tropical countries than has hitherto been supposed, and that, from their hidden life and the impossibility of preserving them, they have hitherto escaped the attention of travelling naturalists. Especially in such islands as the Bermudas, where the earth of the lower grounds contains a great deal of salt, it may easily be imagined how marine animals have taken to terrestrial habits; and it was interesting for me to see that our *Tetrastemma* when put into salt water would live there for twenty-four hours, but when put into fresh water died after a few hours time. Fresh water, however, poured over the earth which contained them did not damage them in the least.

I may here also add that on our cruise from the Bermudas to the Azores I found *parasitical Nemerteans* on *Nautilograpsus minutus*, one of the gulf-weed crabs. They were small brownish animals, and occupied especially the underside of the crab, under the abdomen of which I found most of them. They did not exceed the length of 2 millims.; and in none of them could I see genital organs. In fig. 4 I have figured one of these small parasites, which probably also belong to the genus *Tetrastemma*, though the second pair of eyes is only punctiform, situated on both sides of the proboscis. Nervous system and digestive apparatus do not present any thing particular; the proboscis (fig. 4, pr^1 - pr^3) is remarkable for its shortness.

I do not think that these worms attain their full size on the crab; but believe them to be young parasitical stages of some Nemertean which possibly lives on the gulf-weed. In this group of worms no case of parasitism has, as far as I know, been mentioned before.

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EXPLANATION OF PLATE XVII.

- Fig. 1.* Young male of *Tetrastemma agricola*. Low power. pr^1 - pr^4 , successive portions of the proboscis— pr^1 entrance, pr^2 papillar portion, pr^3 pouch of stylets, pr^4 glandular portion; *ca*, muscular entrance of the glandular portion; *o*, mouth; *i*, intestine; *a*, anus; *g*, ganglion; *n*, lateral nerves.
- Fig. 2.* Part of the male's proboscis. The same letters as above. High power.
- Fig. 3.* Part of the female's proboscis. High power.
- Fig. 4.* Young parasitical *Tetrastemma* from *Nautilograpsus minutus*. High power. Letters as above.